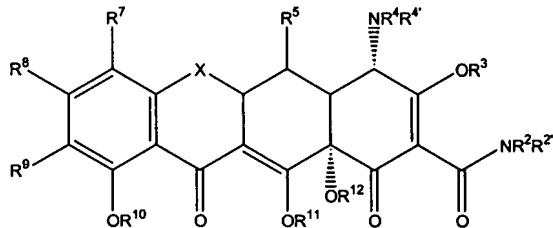


### AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of the claims and listing of the claims in the application:

1. **(Currently Amended)** A substituted tetracycline compound, wherein said compound is of the formula:



wherein:

X is  $\text{CHC}(\text{R}^{13}\text{Y}'\text{Y})$ ,  $\text{CR}^6\text{R}^6$ , S,  $\text{NR}^6$ , or O;

$\text{R}^2$  is hydrogen, alkyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic or a prodrug moiety;

$\text{R}^4$  and  $\text{R}^{4'}$  are each hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic or a prodrug moiety;

$\text{R}^2$ ,  $\text{R}^3$ ,  $\text{R}^{10}$ ,  $\text{R}^{11}$  and  $\text{R}^{12}$  are each hydrogen or a pro-drug moiety;

$\text{R}^5$  is hydrogen, hydroxyl, or a prodrug moiety;

$\text{R}^6$ ,  $\text{R}^{6'}$ , and  $\text{R}^8$  are each independently hydrogen, alkyl, alkenyl, alkynyl, aryl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, or halogen;

$\text{R}^7$  is hydrogen, or  $\text{NR}^{7c}\text{C}(=\text{W}')\text{WR}^{7a}$ ;

$\text{R}^8$  is hydrogen;

$\text{R}^{13}$  is hydrogen, hydroxy, alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an arylalkyl;

$\text{Y}'$  and  $\text{Y}$  are each independently hydrogen; halogen; hydroxyl; cyano, sulphydryl; amino; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an arylalkyl;

$\text{R}^9$  is hydrogen, or  $\text{NR}^{9c}\text{C}(=\text{Z}')\text{ZR}^{9a}$ ;

$\text{Z}$  is O;

$\text{Z}'$  is O or S;

$R^{9a}$  is unsubstituted  $C_3$ - $C_{10}$  alkyl, substituted alkyl, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkylthio, substituted or unsubstituted alkylsulfinyl, substituted or unsubstituted alkylsulfonyl, substituted or unsubstituted arylsulfonyl, substituted or unsubstituted arylcarbonyl, substituted or unsubstituted alkylamino, substituted or unsubstituted arylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted heterocyclic, substituted or unsubstituted heteroaromatic, absent, or a prodrug moiety, wherein said substituted alkyl is substituted with halogen, amino, hydroxyl, alkoxy, alkylcarbonyloxy, alkyloxycarbonyl, arylcarbonyloxy, alkoxycarbonylamino, alkoxycarbonyloxy, aryloxycarbonyloxy, carboxylate, alkylcarbonyl, alkylaminoacarbonyl, arylalkyl aminocarbonyl, alkenylaminocarbonyl, alkylcarbonyl, arylcarbonyl, aminoalkyl, arylalkylcarbonyl, alkenylcarbonyl, alkoxycarbonyl, silyl, aminocarbonyl, alkylthiocarbonyl, phosphate, aralkyl, phosphonato, phosphinato, cyano, acylamino, amido, imino, sulfhydryl, alkylthio, sulfate, arylthio, thiocarboxylate, alkylsulfinyl, sulfonato, sulfamoyl, sulfonamido, nitro, cyano, azido, heterocyclyl, alkylaryl, aryl or heteroaryl; further wherein said substituted alkenyl, substituted alkynyl, substituted alkoxy, substituted alkylthio, substituted alkylsulfinyl, substituted alkylsulfonyl, substituted arylsulfonyl, substituted alkoxycarbonyl, substituted arylcarbonyl, substituted alkylamino, substituted arylalkyl, substituted aryl, substituted heterocyclic, or substituted heteroaromatic is substituted with halogen, amino, alkyl, alkenyl, alkynyl, hydroxyl, alkoxy, alkylcarbonyloxy, alkyloxycarbonyl, arylcarbonyloxy, alkoxycarbonylamino, alkoxycarbonyloxy, aryloxycarbonyloxy, carboxylate, alkylcarbonyl, alkylaminoacarbonyl, arylalkyl aminocarbonyl, alkenylaminocarbonyl, alkylcarbonyl, arylcarbonyl, aminoalkyl, arylalkylcarbonyl, alkenylcarbonyl, alkoxycarbonyl, silyl, aminocarbonyl, alkylthiocarbonyl, phosphate, aralkyl, phosphonato, phosphinato, cyano, acylamino, amido, imino, sulfhydryl, alkylthio, sulfate, arylthio, thiocarboxylate, alkylsulfinyl, sulfonato, sulfamoyl, sulfonamido, nitro, cyano, azido, heterocyclyl, alkylaryl, aryl or heteroaryl;

$R^{9c}$  is hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, arylcarbonyl, alkylamino, arylalkyl, aryl, heterocyclic or heteroaromatic;

W is  $CR^{7d}R^{7e}$ ,  $NR^{7b}$  or O;

W' is O or S; and

$R^{7a}$ ,  $R^{7b}$ ,  $R^{7c}$ ,  $R^{7d}$ , and  $R^{7e}$  are each independently hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, arylsulfonyl, alkoxycarbonyl, arylcarbonyl, alkylamino, arylalkyl,

aryl, heterocyclic, heteroaromatic, absent, or a prodrug moiety, and R<sup>7d</sup> and R<sup>7e</sup> may be linked to form a ring;

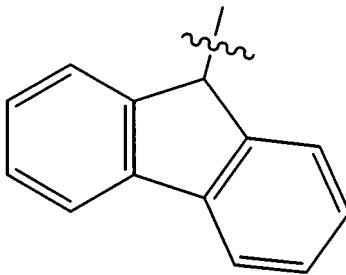
and pharmaceutically acceptable salts thereof, provided that at least one of R<sup>9</sup> is not hydrogen when R<sup>7</sup> is hydrogen.

2.     **(Original)**     The compound of claim 1, wherein R<sup>2</sup>, R<sup>2'</sup>, R<sup>3</sup>, R<sup>8</sup>, R<sup>10</sup>, R<sup>11</sup>, and R<sup>12</sup> are each hydrogen.
3.     **(Original)**     The compound of claim 2, wherein R<sup>4</sup> and R<sup>4'</sup> are each alkyl.
4.     **(Original)**     The compound of claim 3, wherein R<sup>4</sup> and R<sup>4'</sup> are each methyl
5.     **(Cancelled)**
6.     **(Original)**     The compound of claim 4, wherein R<sup>5</sup> is hydrogen.
7.     **(Original)**     The compound of claim 6, wherein X is CH<sub>2</sub>, and R<sup>7</sup> is hydrogen.
8.     **(Previously Presented)**     The compound of claim 140, wherein X is CH<sub>2</sub>, and R<sup>7</sup> is N(Me)<sub>2</sub>.
9.     **(Original)**     The compound of claim 4, wherein R<sup>5</sup> is hydroxyl or a prodrug moiety, and X is CHR<sup>6</sup>.
10.    **(Original)**     The compound of claim 9, wherein R<sup>5</sup> is hydroxyl and R<sup>6</sup> is CH<sub>3</sub>.
11.    **(Original)**     The compound of claim 1, wherein R<sup>9</sup> is NR<sup>9c</sup>C(=Z')ZR<sup>9a</sup>.
12.    **(Original)**     The compound of claim 11, wherein R<sup>9c</sup> is hydrogen.
13.    **(Original)**     The compound of claim 11, wherein Z' is oxygen.
14.    **(Original)**     The compound of claim 11, wherein Z' is sulfur.

15. **(Cancelled)**
16. **(Original)** The compound of claim 13 or 14, wherein Z is oxygen.
17. **(Cancelled)**
18. **(Cancelled)**
19. **(Currently Amended)** The compound of claim 11, wherein R<sup>9a</sup> is selected from the group consisting of substituted C<sub>3</sub>-C<sub>10</sub> alkyl, alkynyl, aryl, arylalkyl, or heteroaromatic.
20. **(Cancelled)**
21. **(Currently amended)** The compound of claim 19, wherein said substituted C<sub>3</sub>-C<sub>10</sub> alkyl is substituted with one or more substituents selected from the group consisting of alkoxy carbonyl, amino, aryl carbonyl, halogen, hydroxy, alkylamino, alkoxy, or aryl.
22. **(Cancelled)**
23. **(Previously presented)** The compound of claim 19, wherein said substituted alkyl is substituted with an aryl group.
24. **(Original)** The compound of claim 23, wherein said aryl group is phenyl.
25. **(Previously presented)** The compound of claim 19, wherein said substituted alkyl is substituted with one or more halogens.
26. **(Original)** The compound of claim 24, wherein said halogen is bromine.
- 27.-29 **(Cancelled)**
30. **(Original)** The compound of claim 19, wherein R<sup>9a</sup> is substituted or unsubstituted aryl.

31. **(Original)** The compound of claim 30, wherein said substituted or unsubstituted aryl is naphthyl.

32. **(Original)** The compound of claim 30, wherein said substituted or unsubstituted aryl is of the formula:



33. **(Original)** The compound of claim 30, wherein said substituted or unsubstituted aryl is phenyl.

34. **(Original)** The compound of claim 33, wherein said aryl is substituted with one or more substituents selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, alkoxy, aryloxy, alkylcarbonyl, arylcarbonyl, alkoxycarbonyl, aryloxycarbonyl, amido, halogen, nitro, azo, alkyl sulfonyl, and arylsulfonyl.

35. **(Original)** The compound of claim 34, wherein said substituent is alkyl.

36. **(Original)** The compound of claim 35, wherein said alkyl is unsubstituted.

37. **(Original)** The compound of claim 35, wherein said alkyl is methyl.

38. **(Original)** The compound of claim 35, wherein said alkyl is substituted with one or more halogens.

39. **(Original)** The compound of claim 34, wherein said substituent is methoxy.

40. **(Original)** The compound of claim 34, wherein said substituent is selected from the group consisting of alkylcarbonyl, arylcarbonyl, alkoxycarbonyl, aryloxycarbonyl, and amido.

41-55. **(Cancelled)**

56. **(Original)** The compound of claim 1, wherein R<sup>7</sup> is NR<sup>7c</sup>C(=W')WR<sup>7a</sup>.

57. **(Original)** The compound of claim 56, wherein R<sup>9</sup> is hydrogen.

58. **(Original)** The compound of claim 57, wherein R<sup>7c</sup> is hydrogen.

59. **(Original)** The compound of claim 57, wherein W' is oxygen.

60. **(Original)** The compound of claim 57, wherein W' is sulfur

61. **(Original)** The compound of claims 59 or 60, wherein W is NR<sup>7b</sup>.

62. **(Original)** The compound of claims 59 or 60, wherein W is oxygen.

63. **(Previously presented)** The compound of claim 57, wherein R<sup>7a</sup> is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, arylalkyl, and heteroaromatic.

64. **(Original)** The compound of claim 63, wherein R<sup>7a</sup> is substituted or unsubstituted alkyl.

65. **(Original)** The compound of claim 64, wherein said alkyl is substituted with an aryl group.

66. **(Original)** The compound of claim 63, wherein said substituted or unsubstituted aryl is phenyl.

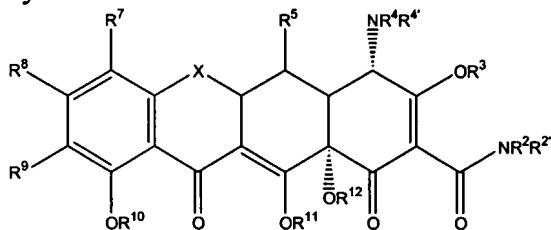
67. **(Original)** The compound of claim 66, wherein said aryl is substituted with one or more substituents selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, alkoxy, aryloxy,

alkylcarbonyl, arylcarbonyl, alkoxycarbonyl, aryloxycarbonyl, amido, halogen, nitro, azo, alkyl sulfonyl, and arylsulfonyl.

68. **(Original)** The compound of claim 67, wherein said substituent is alkyl, alkoxy, or nitro.

**Claims 69.-81.(Cancelled)**

82. **(Currently Amended)** A pharmaceutical composition comprising a therapeutically effective amount of a substituted tetracycline compound and a pharmaceutically acceptable carrier, wherein said substituted tetracycline is of the formula:



(I)

wherein:

X is  $\text{CHC}(\text{R}^{13}\text{Y}'\text{Y})$ ,  $\text{CR}^6\text{R}^6$ , S,  $\text{NR}^6$ , or O;

$\text{R}^2$  is hydrogen, alkyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic or a prodrug moiety;

$\text{R}^4$  and  $\text{R}^{4'}$  are each hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic or a prodrug moiety;

$\text{R}^{2'}$ ,  $\text{R}^3$ ,  $\text{R}^{10}$ ,  $\text{R}^{11}$  and  $\text{R}^{12}$  are each hydrogen or a pro-drug moiety;

$\text{R}^5$  is hydrogen, hydroxyl, or a prodrug moiety;

$\text{R}^6$ ,  $\text{R}^6$ , and  $\text{R}^8$  are each independently hydrogen, alkyl, alkenyl, alkynyl, aryl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, or halogen;

$\text{R}^7$  is hydrogen or  $\text{NR}^{7c}\text{C}(=\text{W}')\text{WR}^{7a}$ ;

$\text{R}^8$  is hydrogen;

$\text{R}^{13}$  is hydrogen, hydroxy, alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an arylalkyl;

Y' and Y are each independently hydrogen; halogen; hydroxyl; cyano, sulphydryl; amino; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an arylalkyl;

R<sup>9</sup> is hydrogen, or NR<sup>9c</sup>C(=Z')ZR<sup>9a</sup>;

Z is O;

Z' is O or S;

R<sup>9a</sup> is unsubstituted C<sub>3</sub>-C<sub>10</sub> alkyl, substituted alkyl, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkylthio, substituted or unsubstituted alkylsulfinyl, substituted or unsubstituted alkylsulfonyl, substituted or unsubstituted arylsulfonyl, substituted or unsubstituted arylsulfonyl, substituted or unsubstituted alkoxy carbonyl, substituted or unsubstituted aryl carbonyl, substituted or unsubstituted alkylamino, substituted or unsubstituted arylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted heterocyclic, substituted or unsubstituted heteroaromatic, ~~absent, or a prodrug moiety~~, wherein said substituted alkyl is substituted with halogen, amino, hydroxyl, alkoxy, alkylcarbonyloxy, alkyloxycarbonyl, arylcarbonyloxy, alkoxy carbonyl amino, alkoxy carbonyloxy, aryloxycarbonyloxy, carboxylate, alkylcarbonyl, alkylaminoacarbonyl, arylalkyl aminocarbonyl, alkenylaminocarbonyl, alkylcarbonyl, arylcarbonyl, aminoalkyl, arylalkylcarbonyl, alkenylcarbonyl, alkoxy carbonyl, silyl, aminocarbonyl, alkylthiocarbonyl, phosphate, aralkyl, phosphonato, phosphinato, cyano, acylamino, amido, imino, sulfhydryl, alkylthio, sulfate, arylthio, thiocarboxylate, alkylsulfinyl, sulfonato, sulfamoyl, sulfonamido, nitro, cyano, azido, heterocyclyl, alkylaryl, aryl or heteroaryl; further wherein said substituted alkenyl, substituted alkynyl, substituted alkoxy, substituted alkylthio, substituted alkylsulfinyl, substituted alkylsulfonyl, substituted arylsulfonyl, substituted alkoxy carbonyl, substituted aryl carbonyl, substituted alkylamino, substituted arylalkyl, substituted aryl, substituted heterocyclic, or substituted heteroaromatic is substituted with halogen, amino, alkyl, alkenyl, alkynyl, hydroxyl, alkoxy, alkylcarbonyloxy, alkyloxycarbonyl, arylcarbonyloxy, alkoxy carbonyl amino, alkoxy carbonyloxy, aryloxycarbonyloxy, carboxylate, alkylcarbonyl, alkylaminoacarbonyl, arylalkyl aminocarbonyl, alkenylaminocarbonyl, alkylcarbonyl, arylcarbonyl, aminoalkyl, arylalkylcarbonyl, alkenylcarbonyl, alkoxy carbonyl, silyl, aminocarbonyl, alkylthiocarbonyl, phosphate, aralkyl, phosphonato, phosphinato, cyano, acylamino, amido, imino, sulfhydryl, alkylthio, sulfate, arylthio, thiocarboxylate, alkylsulfinyl, sulfonato, sulfamoyl, sulfonamido, nitro, cyano, azido, heterocyclyl, alkylaryl, aryl or heteroaryl;

R<sup>9c</sup> is hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, arylsulfonyl, alkoxy carbonyl, aryl carbonyl, alkylamino, arylalkyl, aryl, heterocyclic or heteroaromatic;

W is CR<sup>7d</sup>R<sup>7e</sup>, NR<sup>7b</sup> or O;

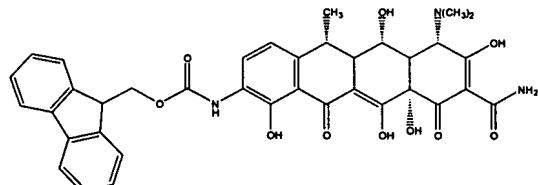
W' is O or S; and

$R^{7a}$ ,  $R^{7b}$ ,  $R^{7c}$ ,  $R^{7d}$ , and  $R^{7e}$  are each independently hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, arylsulfonyl, alkoxycarbonyl, arylcarbonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic, absent, or a prodrug moiety, and  $R^{7d}$  and  $R^{7e}$  may be linked to form a ring;

and pharmaceutically acceptable salts thereof, provided that at least one of  $R^9$  is not hydrogen when  $R^7$  is hydrogen.

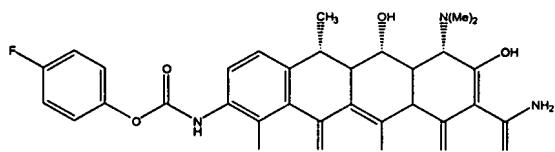
83.-102. **(Cancelled)**

103. **(Previously presented)** The compound of claim 1, wherein said compound is



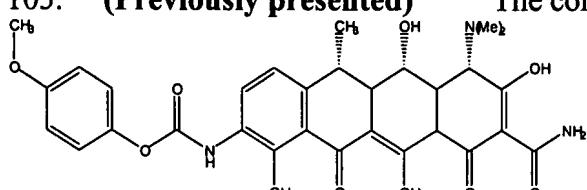
and pharmaceutically acceptable salts and prodrugs thereof.

104. **(Previously presented)** The compound of claim 1, wherein said compound is



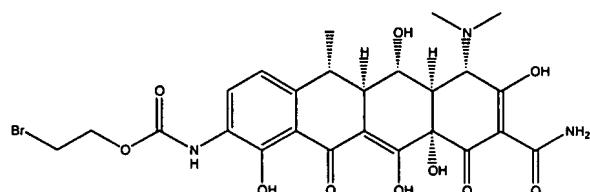
and pharmaceutically acceptable salts and prodrugs thereof.

105. **(Previously presented)** The compound of claim 1, wherein said compound is



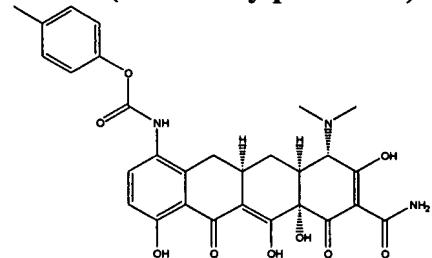
and pharmaceutically acceptable salts and prodrugs thereof.

106. **(Previously presented)** The compound of claim 1, wherein said compound is



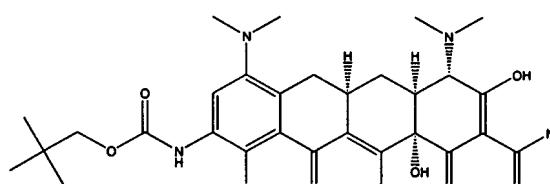
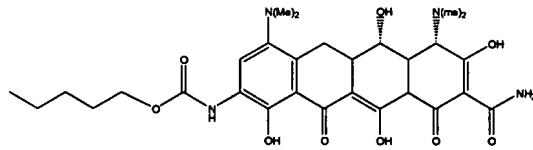
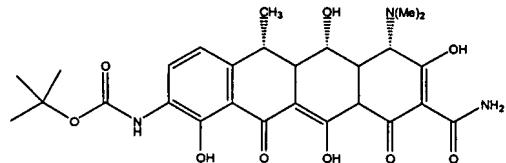
and pharmaceutically acceptable salts and prodrugs thereof.

107. **(Previously presented)** The compound of claim 1, wherein said compound is

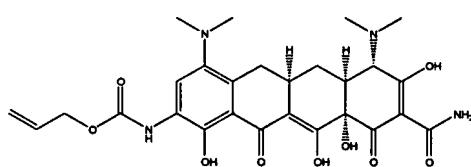


and pharmaceutically acceptable salts and prodrugs thereof.

108. **(Previously presented)** A substituted tetracycline compound, wherein said compound is selected from the group consisting of



and



and pharmaceutically acceptable salts and prodrugs thereof.

109. **(Previously presented)** The compound of claim 1, wherein said compound is doxycycline 9-carbamic acid 9*H*-fluoren-9-yl methyl ester and pharmaceutically acceptable salts and prodrugs thereof.

110. **(Previously presented)** The compound of claim 1, wherein said compound is FMOC 9-amino doxycycline and pharmaceutically acceptable salts and prodrugs thereof.

111. **(Previously presented)** The compound of claim 1, wherein said compound is 9-(4'-fluorophenyl) doxycycline carbamate and pharmaceutically acceptable salts and prodrugs thereof.

112. **(Previously presented)** The compound of claim 1, wherein said compound is 9-(4'-methoxyphenyl) doxycycline carbamate and pharmaceutically acceptable salts and prodrugs thereof.

113. **(Previously Presented)** The compound of claim 140, wherein said compound is minocycline 9-carbamic acid 9*H*-fluoren-9-yl methyl ester and pharmaceutically acceptable salts and prodrugs thereof.

114. **(Previously Presented)** The compound of claim 140, wherein said compound is FMOC 9-amino minocycline and pharmaceutically acceptable salts and prodrugs thereof.

115. **(Previously Presented)** The compound of claim 140, wherein said compound is 9-(4'-fluorophenyl) minocycline carbamate and pharmaceutically acceptable salts and prodrugs thereof.

116. **(Previously Presented)** The compound of claim 140, wherein said compound is 9-(4'-Methoxyphenyl) minocycline carbamate and pharmaceutically acceptable salts and prodrugs thereof.

117. **(Previously presented)** The compound of claim 1, wherein said compound is 9-(2'-bromoethyl) doxycycline carbamate and pharmaceutically acceptable salts and prodrugs thereof.

118. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(4'-methylphenyl) sancycline carbamate and pharmaceutically acceptable salts and prodrugs thereof.

119. **(Previously presented)** The compound of claim 1, wherein said compound is doxycycline 7-carbamic acid 7*H*-fluoren-7-yl methyl ester and pharmaceutically acceptable salts and prodrugs thereof.

120. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(naphthyn-1-yl) doxycycline urea and pharmaceutically acceptable salts and prodrugs thereof.

121. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(3-methyl-1-butyl) doxycycline urea and pharmaceutically acceptable salts and prodrugs thereof.

122. **(Previously presented)** The compound of claim 1, wherein said compound is 7-phenyl doxycycline urea and pharmaceutically acceptable salts and prodrugs thereof.

123. **(Previously presented)** The compound of claim 1, wherein said compound is 7-t-butyl doxycycline urea and pharmaceutically acceptable salts and prodrugs thereof.

124. **(Previously presented)** The compound of claim 1, wherein said compound is 7-Fmoc amino doxycycline and pharmaceutically acceptable salts and prodrugs thereof.

125. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(4'-chloro-2-trifluoromethylphenyl) doxycycline urea and pharmaceutically acceptable salts and prodrugs thereof.

126. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(4'-fluorophenyl) doxycycline carbamate and pharmaceutically acceptable salts and prodrugs thereof.

127. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(4'-methoxyphenyl) doxycycline carbamate and pharmaceutically acceptable salts and prodrugs thereof.

128. **(Previously presented)** The compound of claim 1, wherein said compound is 7-BOC amino doxycycline and pharmaceutically acceptable salts and prodrugs thereof.

129. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(naphthyn-1-yl) doxycycline thiourea 5-propanoic acid ester and pharmaceutically acceptable salts and prodrugs thereof.

130. **(Previously presented)** The compound of claim 1, wherein said compound is doxycycline 7-thiocarbamic acid 7*H*-fluoren-7-yl methyl ester and pharmaceutically acceptable salts and prodrugs thereof.

131. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(naphthyn-1-yl) doxycycline thiourea and pharmaceutically acceptable salts and prodrugs thereof.

132. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(3-methyl-1-butyl) doxycycline thiourea and pharmaceutically acceptable salts and prodrugs thereof.

133. **(Previously presented)** The compound of claim 1, wherein said compound is 7-phenyl amino doxycycline thiourea and pharmaceutically acceptable salts and prodrugs thereof.

134. **(Previously presented)** The compound of claim 1, wherein said compound is 7-t-butyl amino doxycycline thiourea and pharmaceutically acceptable salts and prodrugs thereof.

135. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(4'-chloro-2'-trifluoromethylphenyl) doxycycline thiourea and pharmaceutically acceptable salts and prodrugs thereof.

136. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(4'-fluorophenyl) doxycycline thiocarbamate and pharmaceutically acceptable salts and prodrugs thereof.

137. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(4'-methoxyphenyl) doxycycline thiocarbamate and pharmaceutically acceptable salts and prodrugs thereof.

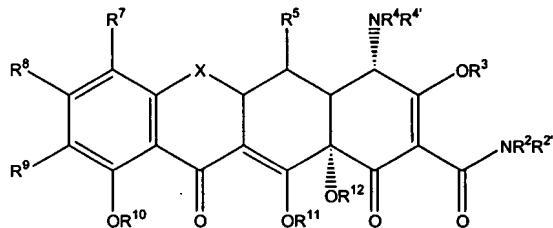
138. **(Previously presented)** The compound of claim 1, wherein said compound is 7-(naphthyn-1-yl) doxycycline urea 5-propanoic acid ester and pharmaceutically acceptable salts and prodrugs thereof.

139. **(Currently Amended)** A ~~substituted~~-tetracycline compound, wherein said compound is selected from the group consisting of:

9-neopentyl minocycline carbamate;  
9-BOC amino doxycycline;  
9-(n-pentyl) minocycline carbamate;

9-BOC amino minocycline carbamate;  
9-(n-pentyl) minocycline carbamate;  
9-prop-2'-enyl minocycline carbamate;  
9-ethyl minocycline carbamate;  
9-n-butyl minocycline carbamate  
9-n-but-3-enyl minocycline carbamate; and  
9-i-butyl minocycline carbamate; and pharmaceutically acceptable salts and prodrugs thereof.

**140. (Currently Amended)** A substituted tetracycline compound, wherein said compound is of the formula:



wherein:

X is  $\text{CHC}(\text{R}^{13}\text{Y}'\text{Y})$ ,  $\text{CR}^{6'}\text{R}^6$ , S,  $\text{NR}^6$ , or O;

$\text{R}^2$  is hydrogen, alkyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic or a prodrug moiety;

$\text{R}^4$  and  $\text{R}^{4'}$  are each hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic or a prodrug moiety;

$\text{R}^{2'}$ ,  $\text{R}^3$ ,  $\text{R}^{10}$ ,  $\text{R}^{11}$  and  $\text{R}^{12}$  are each hydrogen or a pro-drug moiety;

$\text{R}^5$  is hydrogen, hydroxyl, or a prodrug moiety;

$\text{R}^6$ ,  $\text{R}^{6'}$ , and  $\text{R}^8$  are each independently hydrogen, alkyl, alkenyl, alkynyl, aryl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, or halogen;

$\text{R}^7$  dialkylamino;

$\text{R}^8$  is hydrogen;

$\text{R}^{13}$  is hydrogen, hydroxy, alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an arylalkyl;

$\text{Y}'$  and Y are each independently hydrogen; halogen; hydroxyl; cyano, sulphydryl; amino; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an arylalkyl;

R<sup>9</sup> is NR<sup>9c</sup>C(=Z')ZR<sup>9a</sup>;

Z is O;

Z' is O or S;

R<sup>9a</sup> is unsubstituted or substituted C<sub>5</sub>-C<sub>10</sub> alkyl, substituted or unsubstituted C<sub>4</sub>-C<sub>10</sub> alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkylthio, substituted or unsubstituted alkylsulfinyl, substituted or unsubstituted alkylsulfonyl, substituted or unsubstituted arylsulfonyl, substituted or unsubstituted arylcarbonyl, substituted or unsubstituted alkylamino, substituted or unsubstituted arylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted heterocyclic, substituted or unsubstituted heteroaromatic, ~~absent, or a prodrug moiety~~, wherein said substituted alkyl is substituted with halogen, hydroxyl, alkoxy, alkylcarbonyloxy, alkyloxycarbonyl, arylcarbonyloxy, alkoxycarbonylamino, alkoxycarbonyloxy, aryloxycarbonyloxy, carboxylate, alkylcarbonyl, alkylaminoacarbonyl, arylalkyl aminocarbonyl, alkenylaminocarbonyl, alkylcarbonyl, arylcarbonyl, aminoalkyl, arylalkylcarbonyl, alkenylcarbonyl, alkoxycarbonyl, silyl, aminocarbonyl, alkylthiocarbonyl, phosphate, aralkyl, phosphonato, phosphinato, cyano, acylamino, amido, imino, sulfhydryl, alkylthio, sulfate, arylthio, thiocarboxylate, alkylsulfinyl, sulfonato, sulfamoyl, sulfonamido, nitro, cyano, azido, heterocyclyl, alkylaryl, aryl or heteroaryl; further wherein said substituted alkenyl, substituted alkynyl, substituted alkoxy, substituted alkylthio, substituted alkylsulfinyl, substituted alkylsulfonyl, substituted arylsulfonyl, substituted alkoxycarbonyl, substituted arylcarbonyl, substituted alkylamino, substituted arylalkyl, substituted aryl, substituted heterocyclic, or substituted heteroaromatic is substituted with halogen, amino, alkyl, alkenyl, alkynyl, hydroxyl, alkoxy, alkylcarbonyloxy, alkyloxycarbonyl, arylcarbonyloxy, alkoxycarbonylamino, alkoxycarbonyloxy, aryloxycarbonyloxy, carboxylate, alkylcarbonyl, alkylaminoacarbonyl, arylalkyl aminocarbonyl, alkenylaminocarbonyl, alkylcarbonyl, arylcarbonyl, aminoalkyl, arylalkylcarbonyl, alkenylcarbonyl, alkoxycarbonyl, silyl, aminocarbonyl, alkylthiocarbonyl, phosphate, aralkyl, phosphonato, phosphinato, cyano, acylamino, amido, imino, sulfhydryl, alkylthio, sulfate, arylthio, thiocarboxylate, alkylsulfinyl, sulfonato, sulfamoyl, sulfonamido, nitro, cyano, azido, heterocyclyl, alkylaryl, aryl or heteroaryl; and

R<sup>9c</sup> is hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, arylcarbonyl, alkylamino, arylalkyl, aryl, heterocyclic or heteroaromatic; and pharmaceutically acceptable salts thereof.

141. **(Previously Presented)** The compound of claim 140, wherein R<sup>2</sup>, R<sup>2'</sup>, R<sup>3</sup>, R<sup>8</sup>, R<sup>10</sup>, R<sup>11</sup>, and R<sup>12</sup> are each hydrogen.

142. **(Previously Presented)** The compound of claim 140, wherein R<sup>4</sup> and R<sup>4'</sup> are each methyl

143. **(Previously Presented)** The compound of claim 140, wherein R<sup>5</sup> is hydrogen.

144. **(Previously Presented)** The compound of claim 140, wherein R<sup>9</sup> is NR<sup>9c</sup>C(=Z')ZR<sup>9a</sup>.

145. **(Previously Presented)** The compound of claim 144, wherein R<sup>9c</sup> is hydrogen.

146. **(Previously Presented)** The compound of claim 144, wherein Z' is oxygen.

147. **(Previously Presented)** The compound of claim 144, wherein Z' is sulfur.

148. **(Previously Presented)** The compound of claim 144, wherein Z is oxygen.

149. **(Currently Amended)** The compound of claim 144, wherein R<sup>9a</sup> is substituted C<sub>5</sub>-C<sub>10</sub> alkyl, alkynyl, aryl, arylalkyl, or heteroaromatic.

150. **(Currently Amended)** The compound of claim 149, wherein said substituted C<sub>5</sub>-C<sub>10</sub> alkyl is substituted with one or more substituents selected from the group consisting of alkoxy carbonyl, aryl carbonyl, halogen, hydroxy, alkylamino, alkoxy, or aryl.

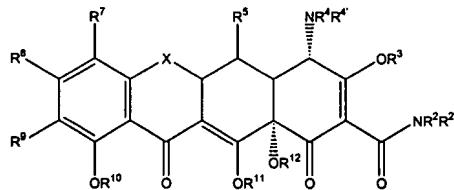
151. **(Previously Presented)** The compound of claim 149, wherein R<sup>9a</sup> is substituted or unsubstituted aryl.

152. **(Previously Presented)** The compound of claim 151, wherein said substituted or unsubstituted aryl is phenyl.

153. **(Previously Presented)** The compound of claim 151, wherein said aryl is substituted with one or more substituents selected from the group consisting of alkyl, alkenyl, alkynyl, aryl,

alkoxy, aryloxy, alkylcarbonyl, arylcarbonyl, alkoxycarbonyl, aryloxycarbonyl, amido, halogen, nitro, azo, alkyl sulfonyl, and arylsulfonyl.

154. **(Currently Amended)** A pharmaceutical composition comprising a therapeutically effective amount of a substituted tetracycline compound and a pharmaceutically acceptable carrier, wherein said substituted tetracycline is of the formula:



(I)

wherein:

X is  $\text{CHC}(\text{R}^{13}\text{Y}'\text{Y})$ ,  $\text{CR}^6\text{R}^6$ , S,  $\text{NR}^6$ , or O;

$\text{R}^2$  is hydrogen, alkyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic or a prodrug moiety;

$\text{R}^4$  and  $\text{R}^{4'}$  are each hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, aryl, heterocyclic, heteroaromatic or a prodrug moiety;

$\text{R}^{2'}$ ,  $\text{R}^3$ ,  $\text{R}^{10}$ ,  $\text{R}^{11}$  and  $\text{R}^{12}$  are each hydrogen or a pro-drug moiety;

$\text{R}^5$  is hydrogen, hydroxyl, or a prodrug moiety;

$\text{R}^6$ ,  $\text{R}^{6'}$ , and  $\text{R}^8$  are each independently hydrogen, alkyl, alkenyl, alkynyl, aryl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, arylalkyl, or halogen;

$\text{R}^7$  dialkylamino;

$\text{R}^8$  is hydrogen;

$\text{R}^{13}$  is hydrogen, hydroxy, alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an arylalkyl;

Y' and Y are each independently hydrogen; halogen; hydroxyl; cyano, sulphydryl; amino; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an arylalkyl;

$\text{R}^9$  is  $\text{NR}^{9c}\text{C}(=\text{Z}')\text{ZR}^{9a}$ ;

Z is O;

Z' is O or S;

R<sup>9a</sup> is unsubstituted or substituted C<sub>5</sub>-C<sub>10</sub> alkyl, substituted or unsubstituted C<sub>4</sub>-C<sub>10</sub> alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkylthio, substituted or unsubstituted alkylsulfinyl, substituted or unsubstituted alkylsulfonyl, substituted or unsubstituted arylsulfonyl, substituted or unsubstituted arylcarbonyl, substituted or unsubstituted alkylamino, substituted or unsubstituted arylalkyl, substituted or unsubstituted aryl, substituted or unsubstituted heterocyclic, substituted or unsubstituted heteroaromatic, ~~absent, or a prodrug moiety~~, wherein said substituted alkyl is substituted with halogen, hydroxyl, alkoxy, alkylcarbonyloxy, alkyloxycarbonyl, arylcarbonyloxy, alkoxycarbonylamino, alkoxycarbonyloxy, aryloxycarbonyloxy, carboxylate, alkylcarbonyl, alkylaminoacarbonyl, arylalkyl aminocarbonyl, alkenylaminocarbonyl, alkylcarbonyl, arylcarbonyl, aminoalkyl, arylalkylcarbonyl, alkenylcarbonyl, alkoxycarbonyl, silyl, aminocarbonyl, alkylthiocarbonyl, phosphate, aralkyl, phosphonato, phosphinato, cyano, acylamino, amido, imino, sulfhydryl, alkylthio, sulfate, arylthio, thiocarboxylate, alkylsulfinyl, sulfonato, sulfamoyl, sulfonamido, nitro, cyano, azido, heterocyclyl, alkylaryl, aryl or heteroaryl; further wherein said substituted alkenyl, substituted alkynyl, substituted alkoxy, substituted alkylthio, substituted alkylsulfinyl, substituted alkylsulfonyl, substituted arylsulfonyl, substituted alkoxycarbonyl, substituted arylcarbonyl, substituted alkylamino, substituted arylalkyl, substituted aryl, substituted heterocyclic, or substituted heteroaromatic is substituted with halogen, amino, alkyl, alkenyl, alkynyl, hydroxyl, alkoxy, alkylcarbonyloxy, alkyloxycarbonyl, arylcarbonyloxy, alkoxycarbonylamino, alkoxycarbonyloxy, aryloxycarbonyloxy, carboxylate, alkylcarbonyl, alkylaminoacarbonyl, arylalkyl aminocarbonyl, alkenylaminocarbonyl, alkylcarbonyl, arylcarbonyl, aminoalkyl, arylalkylcarbonyl, alkenylcarbonyl, alkoxycarbonyl, silyl, aminocarbonyl, alkylthiocarbonyl, phosphate, aralkyl, phosphonato, phosphinato, cyano, acylamino, amido, imino, sulfhydryl, alkylthio, sulfate, arylthio, thiocarboxylate, alkylsulfinyl, sulfonato, sulfamoyl, sulfonamido, nitro, cyano, azido, heterocyclyl, alkylaryl, aryl or heteroaryl; and

R<sup>9c</sup> is hydrogen, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, arylcarbonyl, alkylamino, arylalkyl, aryl, heterocyclic or heteroaromatic; and pharmaceutically acceptable salts thereof.